**Abstract**

The purpose of the experimentation is to compare the performance of tournament algorithm, test-and-set instruction and test-test-and-set instruction.

**Methodology**

The implementation is done in java. Tournament algorithm is implemented as extension of Peterson algorithm handling for n threads. An interface ILock is defined with two methods csLock() and csUnlock(). The interface is implemented by following classes

1. Tournament.java
2. TestAndSet.java
3. TestTestAndSet.java

ApplicationThread.java will call csLock(), ExecuteCriticalSection() and unlock() method for given number of requests. While executing the application, number of threads and number of requests are sent as arguments for the application to run.

**Experimental Setup**

The application is run multiple times by changing number of threads in contention and number of requests that each thread makes to critical section. It is run in Stampede environment (TACC) with multiple core processors. The experimental run is made for threads of count 2, 4, 8, 12, 16 and 20. For each thread count, number requests are varied from 10,000 to 150,000. The readings of the multiple run made in stampede environment is attached with this document in excel sheet.

**Test Result**

Irrespective of number of threads in contention, when the number of requests each thread makes is 10,000 or less, then tournament algorithm and TTAS Instruction behaves almost same. But when number of requests goes more than 20,000, clearly TTAS out beats tournament algorithm in performance.

When the number of thread increases, TTAS Instruction performance increases steeply and better than Tournament algorithm and way better than TAS Instruction.

TAS Instruction performance is not as good as TTAS and Tournament algorithm in all scenarios.

**Conclusion**

TTAS and Tournament algorithm behaves almost same when number of requests is less than 10,000. But TTAS Instruction picks up the performance as the number of threads is more than 12 or number of requests is more than 20,000(one of the two condition satisfies, TTAS wins).